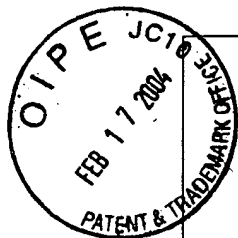


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AF/3671/18



TRANSMITTAL FORM

(To be used for all correspondence after initial filing)

Application Number	10/015,518
Filing Date	December 13, 2001
First Named Inventor	Ian James Rickards
Art Unit	3671
Examiner Name	Gary S. Hartmann
Attorney Docket No.	750036.401C1

ENCLOSURES (check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement; Form PTO-1449 <input type="checkbox"/> Cited References <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts under 37 C.F.R. 1.52 or 1.53 <input type="checkbox"/> Response to Missing Parts/Incomplete Application	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Request for Corrected Filing Receipt <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation, Change of Correspondence Address <input type="checkbox"/> Declaration <input type="checkbox"/> Statement under 37 CFR 3.73(b) <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund	<input type="checkbox"/> CD(s), Number of CD(s) _____ <input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Return Receipt Postcard <input type="checkbox"/> Additional Enclosure(s) (please identify below): _____ _____ _____
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

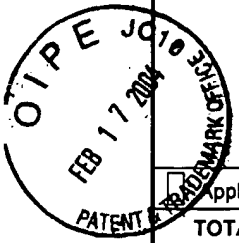
Individual Name	Susan D. Betcher	Customer Number
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Date	February 17, 2004	

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FEE TRANSMITTAL for FY 2004

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$) **330**

Complete if Known

Application Number **10/015,518**
 Filing Date **December 13, 2001**
 First Named Inventor **Ian James Rickards**
 Examiner Name **Gary S. Hartmann**
 Art Unit **3671**
 Attorney Docket No. **750036.401C1**

METHOD OF PAYMENT

☒ Payment Enclosed:
☒ Check ☐ Credit card ☐ Money Order ☐ Other
☐ Deposit Account:
 Deposit Account Number **19-1090**
 Deposit Account Name **Seed Intellectual Property Law Group PLLC**
 The Director is authorized to (check all that apply)
☐ Charge fee(s) indicated below ☒ Credit any overpayments
☐ Charge any additional fee(s) during the pendency of this application
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☒ Charge any deficiencies to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee(\$)	Fee Code	Fee(\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ 0)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
	** =	*	=
Independent Claims	** =	*	=
Multiple Dependent			=

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee(\$)	Fee Code	Fee(\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple dependent claim, if not paid	
1204	86	2204	43	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)					(\$ 0)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small		Fee Description	Fee Paid
Fee Code	Fee(\$)	Fee Code	Fee(\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2520	1812	2520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1840*	1805	1840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1480	2254	740	Extension for reply within fourth month	
1255	2010	2255	1005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1510	1451	1510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1330	2453	665	Petition to revive - unintentional	
1501	1330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 330)

SUBMITTED BY

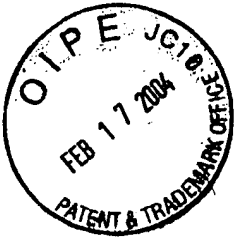
Name (Print/Type) **Susan D. Betcher**
 Signature *[Signature]*
 Registration No. Attorney/Agent **43,498**
 Date **February 17, 2004**

Customer Number

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EXPRESS MAIL NO. EV449556381US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ian James Rickards
Application No. : 10/015,518
Filed : December 13, 2001
For : METHOD FOR ASPHALT COMPACTION AND COMPACTION
APPARATUS

Examiner : Gary S. Hartmann
Art Unit : 3671
Docket No. : 750036.401C1
Date : February 17, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' BRIEF (37 C.F.R. § 1.192)

Commissioner for Patents:

This brief is in furtherance of the Notice of Appeal, filed in this case on December 17, 2003, and further in view of the communication from the Examiner dated July 17, 2003. The fees required under Section 1.17(c), and any required request for extension of time for filing this brief and fees therefore, are dealt with in the accompanying transmittal letter.

I. REAL PARTY IN INTEREST

The rights of the inventor in this Application have been assigned to Pioneer Road Services Party Ltd.

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II. RELATED APPEALS AND INTERFERENCES

Appellants' legal representative and the real party in interest are unaware of any appeal or interference that will directly affect, be directly affected by, or have a bearing on the Board's decision in the present appeal.

III. STATUS OF CLAIMS

Claims 1-13, 16-18, 20, 23, 24 and 33 are pending in the Application.¹ Claims 1-13 and 16-18 were allowed during prosecution.

The Examiner has rejected claim 20, under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 3,696,878 issued to Nelson. The Examiner has also rejected claims 23 and 24 under 35 U.S.C. §103(a) as being unpatentable over Nelson, and further in view of U.S. Patent 3,832,079 issued to Moorhead. The Examiner has also rejected claim 33 under 35 U.S.C. § 103(a) as being unpatentable over Nelson as applied above, and further in view of U.S. Patent No. 4,737,050 issued to Halim.

Appellants' appeal the rejection of each of claims 20, 23, 24, and 33.

IV. STATUS OF AMENDMENTS

Appellants filed a response on June 10, 2003. The Examiner issued a Final Office Action on July 17, 2003, indicating that the Appellants' response to the previous Office Action had been fully considered but not persuasive, and therefore did not place the Application in condition for allowance. Appellants have not filed any amendment subsequent to the Office Action dated July 17, 2003.

V. SUMMARY OF DISCLOSURE

The present invention relates to a method for the compaction of asphalt and a compaction apparatus. (Appellants' Specification, Title, and p. 1, ll. 1-3) More particularly, the present

¹ The Appendix to this brief contains a copy of the claims on appeal.

invention relates to a method and apparatus for compacting hot mix asphalt under conditions that advantageously optimize binder flow within the asphalt during compaction. (p. 1, ll 3-7)

The compaction process begins with the laydown of hot asphalt by a paver on a prepared base, usually followed by pressure on the hot asphalt mat applied by a screed (with or without vibration). The traditional screed was a plate or skid carried by the paver, which slid over the surface of the asphalt mat desirably at or close to the temperature at which the mat is laid. The screed applied some initial compaction, but by its sliding action undesirably caused shear stress in the mat leading to tearing of the mat. Typically the applied static screed pressure was in the order of 10 to 20 kPa and the load duration may be as long as 10-15 seconds. (p. 2, ll. 13-19)

Conventionally, asphalt compaction has been carried out using equipment originally intended for compacting granular non-cohesive materials designed to maximize the compaction energy applied to the material, primarily by using large and heavy steel drum rollers, often in combination with high energy oscillation or vibration. Rubber-tired roller compaction is also used in conjunction with steel drum roller compaction. (p. 2, ll. 21-25)

“The contact stress between the roller and the asphalt mat generally depends on the stiffness of the asphalt mix, which is in turn strongly influenced by the stiffness of the binder. The contact area between the steel drum and the asphalt, that is the length of contact by the width of the roller drum, will diminish as a result of the compaction achievement and the increase in mix stiffness with the cooling of the mat.” (p. 2, ll. 26-30) “Thus the application of a load of short duration will result in an asphalt response that is more elastic than viscous, as the binder simply does not have time to flow.” (p. 3, ll. 24-28)

Roller cracking resulting from low mat temperatures is usually manifest as fine, parallel cracks in the asphalt mat which are transverse to the direction of rolling. A multi-wheeled rubber-tired roller following the vibratory roller compactor is commonly used to apply a kneading/shearing action to at least the surface of the compacted asphalt mat, and thereby complete the compaction of the mat. Water is applied to the tires of the rubber-tired roller during

rolling to alleviate material pick-up. However, although the cracks may be closed at the surface, this water may inadvertently be injected into the cracks before they are sealed, forming encapsulated water deposits beneath the surface of the asphalt mat. Encapsulated water may inhibit healing or encourage stripping in the asphalt mat. (p. 3, ll.5-16)

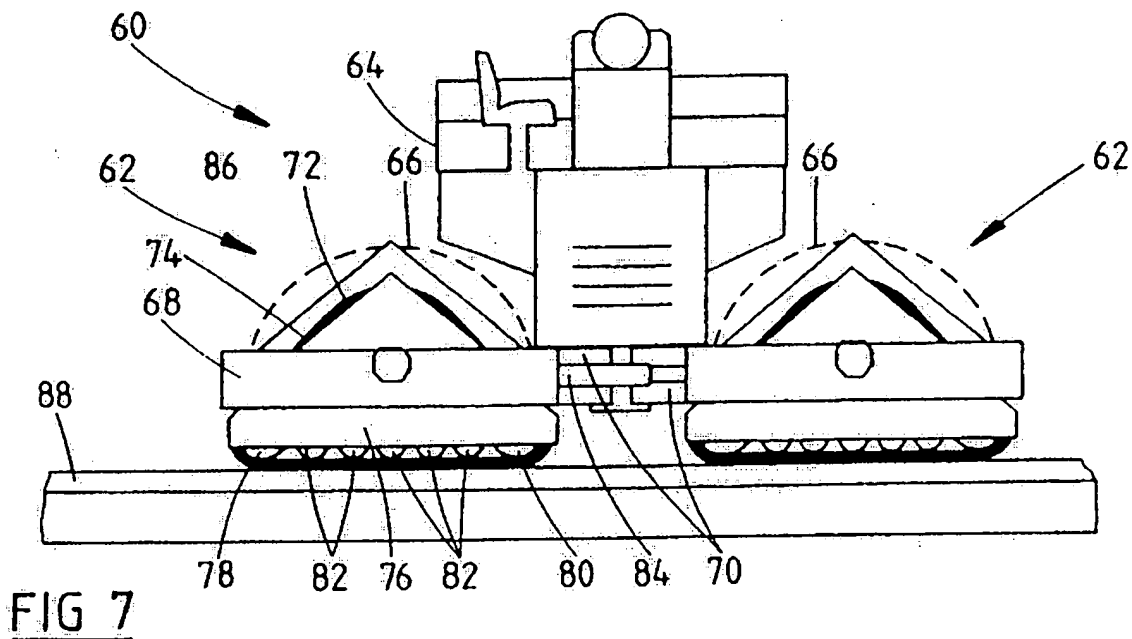
The present invention operates in the visco-elastic range of the binder, wherein the response to load is not only temperature dependent, but also time dependent. Load duration may be varied by changing either or both the length of the compaction surface and the rate of displacement of the compactor over the mat. (p. 6, ll. 23-25) The belt compactor of the current invention applies a load stress of only about 5% of the traditional roller compactor, but the load is applied over a longer duration than a roller compactor due to the increased contact length of the belt. (p. 5, ll. 18-21)

In the embodiment claimed in independent claim 20, the lower run of the belt extends between two relatively small drums or rollers and at least one upper roller, which may be larger, supports the upper run of the belt. Between the leading and trailing ends of the lower run, the belt may also be supported or engaged by any suitable means to provide the desired constant or gradually increasing load stress to the surface. For example, as shown in Figures 7 and 8, spaced rails or other guide means supports the steel-segment belt, while the elastomeric belt is supported by an array of intermediate rollers or drums or by a slide surface. (p. 12, ll. 25-30, p. 13, l. 1, Figures 7 and 8)

This is discussed further in the specification with respect to Figures 1 and 2, wherein the lower run of the split belt 11 between the drum 12 and the roller 14b is supported against upwards deflection at the level of the common tangent of the drum 12 and roller 14b by a slide surface defined by a bottom wall of the reservoir 13. Alternatively, an array of small rollers is provided beneath the reservoir 13 to support the belt in its planar lower run. (p. 15, ll. 28-30, p. 16, ll. 1-2)

Referring more specifically to Figures 7 and 8, there is shown a compactor 60 that is intended to be used in the same manner as the compactor 30 of Figures 5 and 6. The

compactor 60 shows a modular form of belt compaction unit, two of which replace the dual steel drum in a known articulated dual drum compactor. (p. 19, 25-30, p. 20, ll. 1-2, Figures 7 and 8) The rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62. (p. 20, ll.12-14)



The lower roller assembly shown in Figure 7 supports to the lower planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt including the lower planar run of the belt that defines the compaction surface of the compactor module.

VI. SUMMARY OF PRIOR ART INVENTIONS

A. **The Nelson Reference**

Nelson relates to “an improved vehicle for traveling over rough terrain having a steering unit and a traction unit connected together.” (col. 1, ll. 7-9) Nelson teaches a traction vehicle in

which a traction unit and a steering unit are connected together by a universal connection enabling the two units to pivot about longitudinal and transverse axes. (abstract, col. 2, ll. 41-49) Each unit is supported on endless flexible traction devices trained about low-pressure rubber tires and maintained under tension-by-tension idlers forming guides for the flexible traction devices. (abstract) "A principle object of the invention is to provide an improved form of vehicle of the type described in which traction of the vehicle is attained by continuous flexible traction devices trained about low pressure rubber tires." (col. 1, ll.17-22)

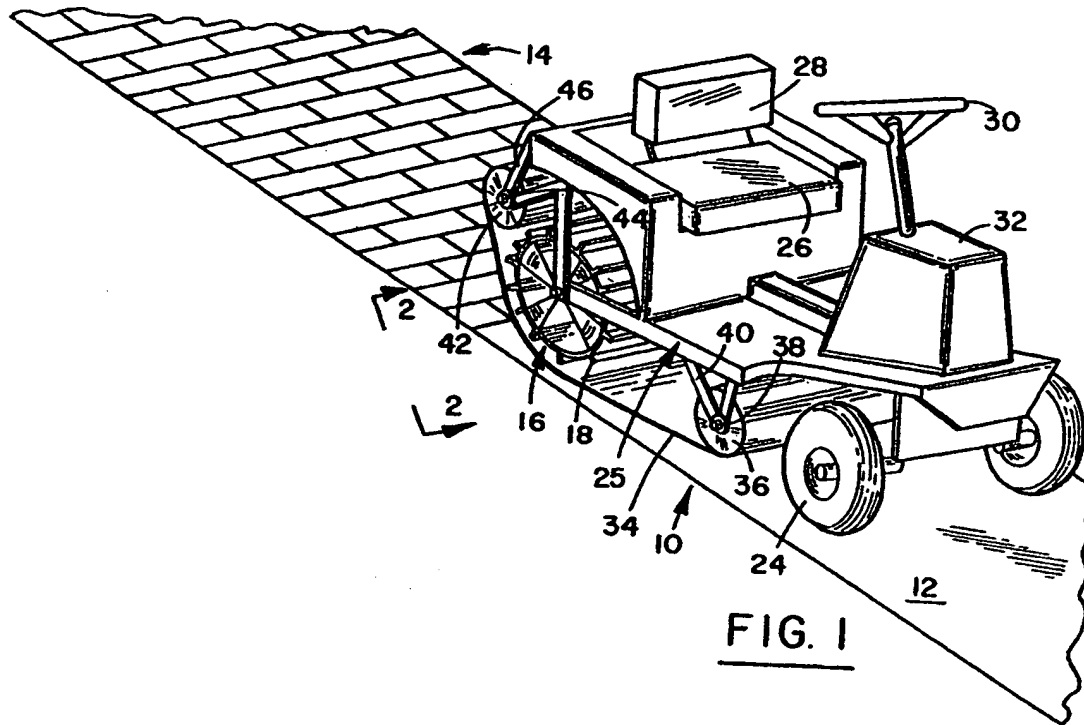
"The low pressure rubber tires 25 are relatively wide and are of a large diameter with respect to wheels 23 and are of the doughnut type of tire known by the trade name of "TERRA TIRE." (col. 2, ll. 60-64)

"The traction devices of the traction unit 11 comprise endless belts 57 trained about the tires 25 on each set of front and rear wheels. The belts 57 may be fabric and rubber belts or may be made from various other materials that have good tractive effort with the ground and give a long life and lay a track along the ground on which the rubber tires may ride. (col. 3, ll. 58-64) The transverse centers of the tires 25 and belts 57 are designated by centerlines B. Fig. 5 illustrates that the space between the center lines B is greater than the space between the center lines A, resulting in a rectangular arrangement of the wheels 25 and belts 57 with the long side of the rectangle facing in the direction of travel of the vehicle. This results in a stable supporting and drive arrangement for the vehicle and retains the belts 57 to the low-pressure tires 25 by the tension of the belts applied thereto by the tension idlers 59. The traction unit, therefore, can travel over relatively rough terrain and make sharp turns and the belts 57 will be retained in centered relation with respect to the wheels" (col. 4, ll. 18-34)

B. The Moorhead Reference

Moorhead teaches "a continuous concrete impressments process and apparatus to provide concrete with a smooth and undisturbed patterned surface." (col. 2, ll. 32-35) Referring to Figure 1, "a motorized tractor 10 is seen overlying a concrete surface 12 which has recently been

poured. The concrete surface 12 that has been impressed with a pattern seen generally in the area designated 14. The impressments has been effectuated by a roller 16 having a series of blades 18 that are shown with longitudinal portions 20 and lateral portions 22 thereof. A drum surface 17 is utilized to support the blades 18. The blades 20 and 22 effectuate an impressments of the concrete to provide the pattern generally shown at 14.” (Figure 1, col. 4, ll. 16-27)



“The tractor has been provided with tires 24, a frame 25 for support of the tractor and the rear rollers 16. (Figure 1, col. 3, ll.27-29) “A sheet of plastic 34 is provided to aid as a release agent for the blades 20 and 22. The sheet of plastic 34 is reeled outwardly from the roll of plastic 36 supported on a spindle 38 with frame members 40 holding the spindle 38.” (Figure 1, col. 3, ll. 41-47)

C. The Hamlin Reference

Hamlin teaches an improved method of compacting asphalt pavement recognizing that the ratio between the stiffness of the compactor (E_1) to the stiffness of the asphalt (E_2) should be as low as possible. Further, Hamlin teaches that the radius of the compactor drum (R_1) to the

radius of the curvature of the compacted asphalt (R2) should be as close to 1 as possible. (col. 3, ll. 55-68)

REJECTIONS

VII. ISSUES

The following issues are presented for review:

1. Whether claim 20 should be rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,696,878 to Nelson.
2. Whether claims 23 and 24 should be rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 3,832,079 to Moorhead.
3. Whether claim 33 should be rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 4,737,050 to Halim.

VIII. GROUPING OF CLAIMS

The rejected claims 20, 23-24, and 33 stand or fall together.

IX. ARGUMENTS

Claim 20 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,696,878 issued to Nelson.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.”

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipse dixit* test, *i.e.*, identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

Nelson does not disclose each and every element of the compactor of claim 20, therefore, the Examiner has failed to present a *prima facie* case of anticipation of claim 20. The Examiner erred in asserting that Nelson teaches or enables each of the claimed elements, either expressly or inherently, of the invention as interpreted by one of ordinary skill in the art. In particular, with respect to claim 20, Nelson fails to teach “a support means defining a planar lower run of the belt and forming a compaction surface,” as recited in claim 1.

Independent claim 20 and the dependent claims thereof are directed to a compactor having at least two modular compaction units, a compaction belt and support means for the belt on the compaction units and a power source. The support means defines a planar lower run of the belt and forms a compaction surface. For example, independent claim 20 recites:

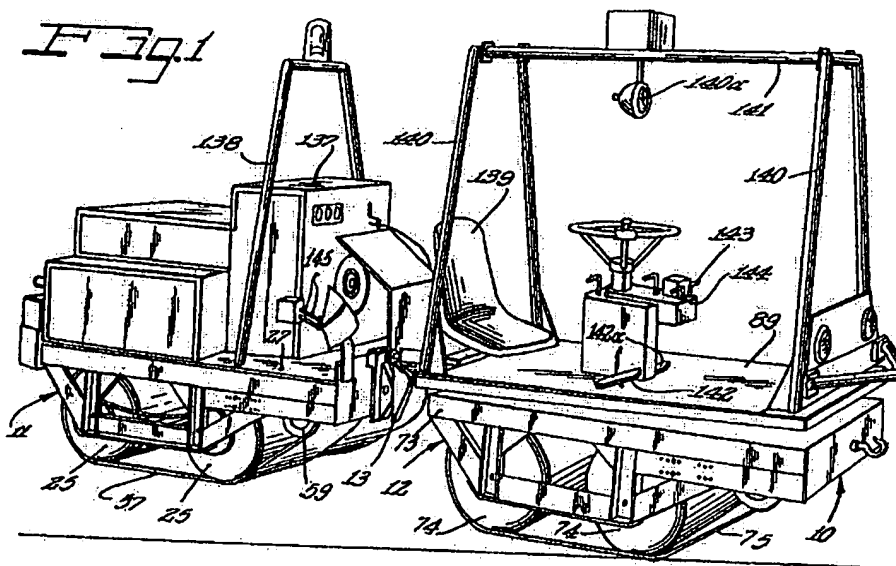
20. A compactor comprising at least two longitudinally spaced modular compaction units connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor, and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface, and wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, supports the upper run of the belt.

Independent claim 20 further claims at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, which supports the upper run of the belt.

As described in the specification, and further in view of Figure 7, “rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62.” (p. 20, ll.12-14) The lower roller assembly shown in Figure 7 supports the lower

planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt, wherein the entire length of the belt, namely the lower planar run, is the compaction surface of the compactor module.

Nelson teaches a traction vehicle 10 with a rear traction unit 11. The traction units comprise endless belts 57 trained about the tires 25 on each set of front and rear wheels. (col. 3, ll. 58-62). The belts may be fabric and rubber belts or may be made from various other materials, which have good tractive effort with the ground and give a long life. (col. 3, ll. 62-64) Further, Nelson discloses wide, low-pressure tires 25 of large diameter for use with the traction vehicle 10. (col. 2, ll. 60-64) Nelson does not disclose a compaction belt or a support means defining a planar lower run of the belt forming a compaction surface. The belt 57 of Nelson does not provide a compaction surface according to principles of the present invention. The belt of Nelson is taught to "lay a track along the ground on which the rubber tires may ride." (col. 3, ll. 62-65, see also Figure 1 below)



Further, Nelson does not disclose at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, which supports the upper run of the belt. Nelson does not disclose two relatively small drums or rollers. Because claim 20 contains at least one element that is not disclosed by Nelson, claim 20 is *prima facie* not anticipated by Nelson. Therefore, claim 20 is patentable over Nelson.

Conclusion of Rejection Under 35 U.S.C. § 102

The Examiner has erred in asserting that Nelson teaches each of the claimed limitations of claim 20 as interpreted by one of ordinary skill in the art. Nelson does not teach a compaction belt or a support means defining a planar lower run of the belt forming a compaction surface; two relatively small drums or rollers, or at least one upper roller positioned vertically above the drums. For at least these reasons, the Examiner has failed to present a *prima facie* case of anticipation of claim 20.

Rejections Under 35 U.S.C. § 103(a)

Claims 23 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 3,977,074 to Moorhead. Appellants believe the Examiner did not meet his burden to present a *prima facie* case of obviousness. In particular, the Examiner erred in combining Nelson and Moorhead. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of

ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

With respect to the §103 rejections, according to MPEP 2141.01(a), “in order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Further, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984).

In the present application, the problem with which the inventor is concerned is the compaction of asphalt. Nelson in no way addresses compaction issues, and is not directed for use with asphalt, but rather discloses a simple and improved form of a vehicle, adapted for traveling over rough terrain. (col. 7, ll. 20-23) Nelson teaches that traction is attained by continuous flexible traction devices trained about low-pressure rubber tires. (col. 1, ll. 19-23) The purpose of the belt in Nelson is to provide a riding surface for the rubber tires. (col. 3, ll. 61-64) The rough terrain vehicle of Nelson is non-analogous to the asphalt compaction apparatus of the present invention.

Further, according to MPEP 2143.02, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, or if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or modification to make the proposed modification and the references are not sufficient to render the claims *prima facie* obvious.

With respect to claims 23 and 24, modifying Nelson to create a compaction device changes the principle of operation and renders Nelson unsatisfactory for its intended purpose, namely, improved travel over rough terrain. Moorhead does not correct the deficiency of

Nelson. The drum configuration of Moorhead does not change that Nelson is not a compaction device, but an improved rough terrain vehicle.

As discussed in detail above, Nelson does not teach or disclose a compaction belt having a support means for the belt to define a planar lower run of the belt and form a compaction surface. Moorhead does not correct the deficiency of Nelson. The “belt” of Moorhead is not only unsupported, but is a sheet of plastic for ensuring that the blades and roller can impress the newly formed concrete, but will then not remove material from or gouge the newly laid concrete. (col. 3, ll. 40-63) The sheet of plastic of Moorhead is incapable of providing a constant compaction pressure to the asphalt, and any attempt to modify Nelson in view of Moorhead would render the inventions unsatisfactory for their intended purpose.

Referring to the instant invention, as discussed in the final paragraph of page 4 and through the Specification thereafter, the present invention recognizes that a visco-elastic fluid, such as the binder in hot mix asphalt, has a response to a load that is not only temperature dependent, but also time dependent. The present invention, as claimed, is directed to a compactor having at least two modular compaction units, a compaction belt and support means for the belt on the compaction units and a power source. The support means defines a planar lower run of the belt and forms a compaction surface. As described in the specification, as further in view of Figure 7, “rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62.” (p. 20, ll.12-14) The lower roller assembly shown in Figure 7 supports to the lower planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt, wherein the entire length of the belt, namely the lower planar run, is the compaction surface of the compactor module.

An analysis under § 103 requires that the Examiner explain why, after assessing the level of those skilled in the art, the skilled artisan would have found the claimed subject matter, as a whole, to have been obvious. To establish a *prima facie* case of obviousness, there must be some

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references, and there must be a reasonable expectation of success. MPEP § 706.02(j). The suggestion or motivation to make the claimed combination and a reasonable expectation of success must both be found in the prior art. *Id.* The Examiner cannot rely on hindsight as the basis for combining two references. If the references do not expressly or impliedly suggest the combination, “the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Id.* (citing *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985)).

There is no motivation in the references themselves to combine these references. The Examiner has agreed that the intended use of Nelson is not asphalt compaction; however, the Examiner incorrectly concludes that one skilled in the art would have seen similarities of construction and would have considered using the apparatus of Nelson to perform the method of the instant invention. (Office Action dated July 17, 2004, page 4, paragraph 7) The Examiner further notes that “if the apparatus of Nelson was simply driven on a hot asphalt roadway, the apparatus of Nelson would apply a load to the asphalt; thereby compacting it at least slightly.” (Office Action dated July 17, 2004, page 3, paragraph 5) Following this logic, any roller driven unit would suffice for asphalt compaction, including cars, trucks, all-terrain vehicles and the like. This is clearly not logical. Further, Moorhead is directed toward impressing a pattern on a concrete surface; relevant neither to asphalt nor compaction, and thus does not correct the deficiencies of Nelson. The references, consequently, do not suggest the specific compaction apparatus of the instant invention.

There is also no motivation in the knowledge generally available to one of ordinary skill in the art of asphalt compaction to combine these references to result in the instant invention. The Examiner does not state how an individual of ordinary skill in the art would understand that the improved traction vehicle of Nelson would be useful for asphalt compaction. Further, the Examiner does not explain how such a person would recognize that a visco-elastic fluid, such as

the binder in a hot mix asphalt, has a response to a load which is not only temperature dependent, but also time dependent, and more specifically that the present invention teaches that a larger compaction surface provides improved compaction of the asphalt surface. Further, as noted above, Moorhead is directed toward impressing a pattern on a concrete surface and does not correct the deficiencies of Nelson. Anyone skilled in the art of asphalt and concrete paving understands that the equipment and methods for asphalt and concrete paving are clearly differentiated, provide vastly different processes to pave very different materials, and are non-analogous for purposes of prior art references.

The Examiner accordingly has not succeeded in bringing a *prima facie* case of obviousness in this instance. Claims 23 and 24 therefore are patentable under 35 U.S.C. § 103(a) over Nelson in view of Moorhead.

Claim 33 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson as applied above, and further in view of U.S. Patent No. 4,737,050 to Halim. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

As applied to claim 33, Hamlin does not correct the deficiencies of Nelson. The Examiner notes that Nelson does not teach asphalt compaction,” and then uses Halim to teach “using a belt compactor for use with asphalt.” The Examiner further notes that “if the apparatus of Nelson was simply driven on a hot asphalt roadway, the apparatus of Nelson would apply a load to the asphalt; thereby compacting it at least slightly.” (Office Action dated July 17, 2004, page 3, paragraph 5) Additionally, the Examiner states, “Nelson does act as a compactor since compaction is achieved by placing a load on a surface to be compacted, which Nelson inherently does.” (Office Action dated July 17, 2004, page 4, paragraph 7)

Under the principles of inherency, in order for a prior art device to inherently anticipate a claimed process, the device must necessarily perform the method claimed during its normal and usual operation. See MPEP §2112.02. Further, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-1 (Fed. Cir. 1999) (citations omitted). The load pressure and duration of applied load pressure are not necessarily present in the references cited. Further, although the load pressure and duration *may* occur, the Examiner has not established that this occurrence is more than a mere possibility.

There is no motivation in the references themselves to combine these references. The Examiner has indicated that Nelson does not teach compacting asphalt. Halim does not correct the deficiencies of Nelson. As discussed above with respect to independent claim 20 from which dependent claim 33 depends, the apparatus of the present invention provides for a load applied over a longer duration due to the increased compactive surface, namely, the entire length of the belt, referred to herein as the lower planar run, is the compaction surface of the compactor module. Nelson in combination with Halim, does not suggest the specific compaction apparatus as claimed by the instant invention.

There is also no motivation in the knowledge generally available to one of ordinary skill in the art of asphalt compaction to combine these references to result in the instant invention. The form and function of traditional compaction equipment are not consistent with those of the instant invention. There is no basis for assuming that qualities beneficial to traditional asphalt compacting equipment are also likely to be beneficial to the instant invention. The Examiner does not state how an individual of ordinary skill in the art would understand that the improved traction vehicle of Nelson would be useful for asphalt compaction.

The Examiner accordingly has not succeeded in bringing a *prima facie* case of obviousness in this instance. Claim 33 therefore is patentable under 35 U.S.C. § 103(a) over Nelson in view of Halim.

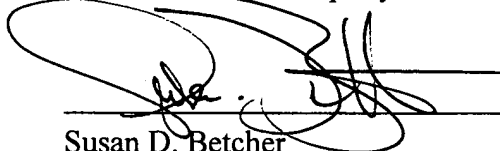
X. CONCLUSION

In summary, applicant believes that the claims of the present invention are patentable, and not obvious in light of the combination of the cited references made by the Examiner. Allowance of the claims is respectfully requested. Accordingly, Appellants respectfully request that the Board reverse the rejection of each of the appealed claims.

Respectfully submitted,

Ian James Rickards

Seed Intellectual Property Law Group PLLC



Susan D. Betcher
Registration No. 43,498

SDB:mt

Enclosures:

Postcard
Check No. 28125 for \$330
Transmittal Form
Fee Transmittal Form (+ copy)
Two copies of this Brief with Appendix

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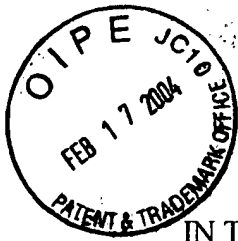
APPENDIX A

20. (Previously Presented) A compactor comprising at least two longitudinally spaced modular compaction units connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor, and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface, and wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, supports the upper run of the belt.

23. (Previously Presented) A compactor according to claim 20 wherein in each modular compaction unit the belt extends between two large diameter drums or a single larger diameter drum at the leading end of the respective compaction unit, which is optionally driven, and two smaller drums or rollers respectively defining the upper and lower runs of the belt at the trailing end of the respective compaction unit.

24. (Previously Presented) A compactor according to claim 20 wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller, which may optionally be larger than the two relatively small drums or rollers, supports and upper run of the belt.

33. (Previously Presented) A method of compacting a mat of hot mix asphalt comprising compacting the mat using a compactor as claimed in claim 20.



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ian James Rickards
Application No. : 10/015,518
Filed : December 13, 2001
For : METHOD FOR ASPHALT COMPACTION AND COMPACTION
APPARATUS

Examiner : Gary S. Hartmann
Art Unit : 3671
Docket No. : 750036.401C1
Date : February 17, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' BRIEF (37 C.F.R. § 1.192)

Commissioner for Patents:

This brief is in furtherance of the Notice of Appeal, filed in this case on December 17, 2003, and further in view of the communication from the Examiner dated July 17, 2003. The fees required under Section 1.17(c), and any required request for extension of time for filing this brief and fees therefore, are dealt with in the accompanying transmittal letter.

I. REAL PARTY IN INTEREST

The rights of the inventor in this Application have been assigned to Pioneer Road Services Party Ltd.

II. RELATED APPEALS AND INTERFERENCES

Appellants' legal representative and the real party in interest are unaware of any appeal or interference that will directly affect, be directly affected by, or have a bearing on the Board's decision in the present appeal.

III. STATUS OF CLAIMS

Claims 1-13, 16-18, 20, 23, 24 and 33 are pending in the Application.¹ Claims 1-13 and 16-18 were allowed during prosecution.

The Examiner has rejected claim 20, under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 3,696,878 issued to Nelson. The Examiner has also rejected claims 23 and 24 under 35 U.S.C. §103(a) as being unpatentable over Nelson, and further in view of U.S. Patent 3,832,079 issued to Moorhead. The Examiner has also rejected claim 33 under 35 U.S.C. § 103(a) as being unpatentable over Nelson as applied above, and further in view of U.S. Patent No. 4,737,050 issued to Halim.

Appellants' appeal the rejection of each of claims 20, 23, 24, and 33.

IV. STATUS OF AMENDMENTS

Appellants filed a response on June 10, 2003. The Examiner issued a Final Office Action on July 17, 2003, indicating that the Appellants' response to the previous Office Action had been fully considered but not persuasive, and therefore did not place the Application in condition for allowance. Appellants have not filed any amendment subsequent to the Office Action dated July 17, 2003.

V. SUMMARY OF DISCLOSURE

The present invention relates to a method for the compaction of asphalt and a compaction apparatus. (Appellants' Specification, Title, and p. 1, ll. 1-3) More particularly, the present

¹ The Appendix to this brief contains a copy of the claims on appeal.

invention relates to a method and apparatus for compacting hot mix asphalt under conditions that advantageously optimize binder flow within the asphalt during compaction. (p. 1, ll 3-7)

The compaction process begins with the laydown of hot asphalt by a paver on a prepared base, usually followed by pressure on the hot asphalt mat applied by a screed (with or without vibration). The traditional screed was a plate or skid carried by the paver, which slid over the surface of the asphalt mat desirably at or close to the temperature at which the mat is laid. The screed applied some initial compaction, but by its sliding action undesirably caused shear stress in the mat leading to tearing of the mat. Typically the applied static screed pressure was in the order of 10 to 20 kPa and the load duration may be as long as 10-15 seconds. (p. 2, ll. 13-19)

Conventionally, asphalt compaction has been carried out using equipment originally intended for compacting granular non-cohesive materials designed to maximize the compaction energy applied to the material, primarily by using large and heavy steel drum rollers, often in combination with high energy oscillation or vibration. Rubber-tired roller compaction is also used in conjunction with steel drum roller compaction. (p. 2, ll. 21-25)

“The contact stress between the roller and the asphalt mat generally depends on the stiffness of the asphalt mix, which is in turn strongly influenced by the stiffness of the binder. The contact area between the steel drum and the asphalt, that is the length of contact by the width of the roller drum, will diminish as a result of the compaction achievement and the increase in mix stiffness with the cooling of the mat.” (p. 2, ll. 26-30) “Thus the application of a load of short duration will result in an asphalt response that is more elastic than viscous, as the binder simply does not have time to flow.” (p. 3, ll. 24-28)

Roller cracking resulting from low mat temperatures is usually manifest as fine, parallel cracks in the asphalt mat which are transverse to the direction of rolling. A multi-wheeled rubber-tired roller following the vibratory roller compactor is commonly used to apply a kneading/shearing action to at least the surface of the compacted asphalt mat, and thereby complete the compaction of the mat. Water is applied to the tires of the rubber-tired roller during

rolling to alleviate material pick-up. However, although the cracks may be closed at the surface, this water may inadvertently be injected into the cracks before they are sealed, forming encapsulated water deposits beneath the surface of the asphalt mat. Encapsulated water may inhibit healing or encourage stripping in the asphalt mat. (p. 3, ll.5-16)

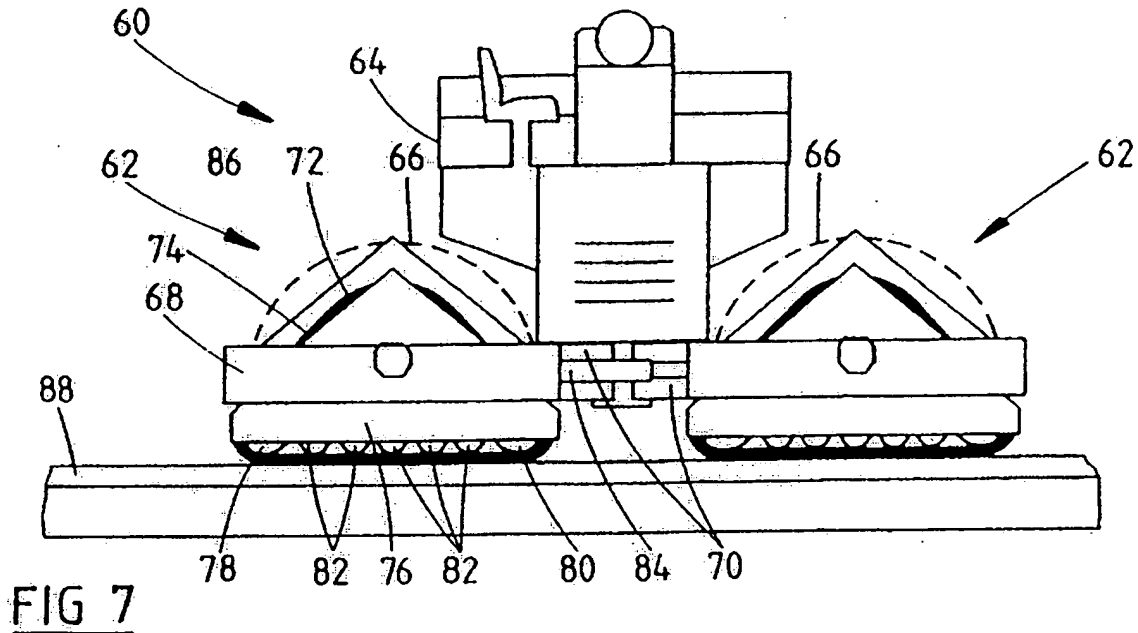
The present invention operates in the visco-elastic range of the binder, wherein the response to load is not only temperature dependent, but also time dependent. Load duration may be varied by changing either or both the length of the compaction surface and the rate of displacement of the compactor over the mat. (p. 6, ll. 23-25) The belt compactor of the current invention applies a load stress of only about 5% of the traditional roller compactor, but the load is applied over a longer duration than a roller compactor due to the increased contact length of the belt. (p. 5, ll. 18-21)

In the embodiment claimed in independent claim 20, the lower run of the belt extends between two relatively small drums or rollers and at least one upper roller, which may be larger, supports the upper run of the belt. Between the leading and trailing ends of the lower run, the belt may also be supported or engaged by any suitable means to provide the desired constant or gradually increasing load stress to the surface. For example, as shown in Figures 7 and 8, spaced rails or other guide means supports the steel-segment belt, while the elastomeric belt is supported by an array of intermediate rollers or drums or by a slide surface. (p. 12, ll. 25-30, p. 13, l. 1, Figures 7 and 8)

This is discussed further in the specification with respect to Figures 1 and 2, wherein the lower run of the split belt 11 between the drum 12 and the roller 14b is supported against upwards deflection at the level of the common tangent of the drum 12 and roller 14b by a slide surface defined by a bottom wall of the reservoir 13. Alternatively, an array of small rollers is provided beneath the reservoir 13 to support the belt in its planar lower run. (p. 15, ll. 28-30, p. 16, ll. 1-2)

Referring more specifically to Figures 7 and 8, there is shown a compactor 60 that is intended to be used in the same manner as the compactor 30 of Figures 5 and 6. The

compactor 60 shows a modular form of belt compaction unit, two of which replace the dual steel drum in a known articulated dual drum compactor. (p. 19, 25-30, p. 20, ll. 1-2, Figures 7 and 8)
 The rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62. (p. 20, ll.12-14)



The lower roller assembly shown in Figure 7 supports to the lower planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt including the lower planar run of the belt that defines the compaction surface of the compactor module.

VI. SUMMARY OF PRIOR ART INVENTIONS

A. **The Nelson Reference**

Nelson relates to “an improved vehicle for traveling over rough terrain having a steering unit and a traction unit connected together.” (col. 1, ll. 7-9) Nelson teaches a traction vehicle in

which a traction unit and a steering unit are connected together by a universal connection enabling the two units to pivot about longitudinal and transverse axes. (abstract, col. 2, ll. 41-49) Each unit is supported on endless flexible traction devices trained about low-pressure rubber tires and maintained under tension-by-tension idlers forming guides for the flexible traction devices. (abstract) “A principle object of the invention is to provide an improved form of vehicle of the type described in which traction of the vehicle is attained by continuous flexible traction devices trained about low pressure rubber tires.” (col. 1, ll.17-22)

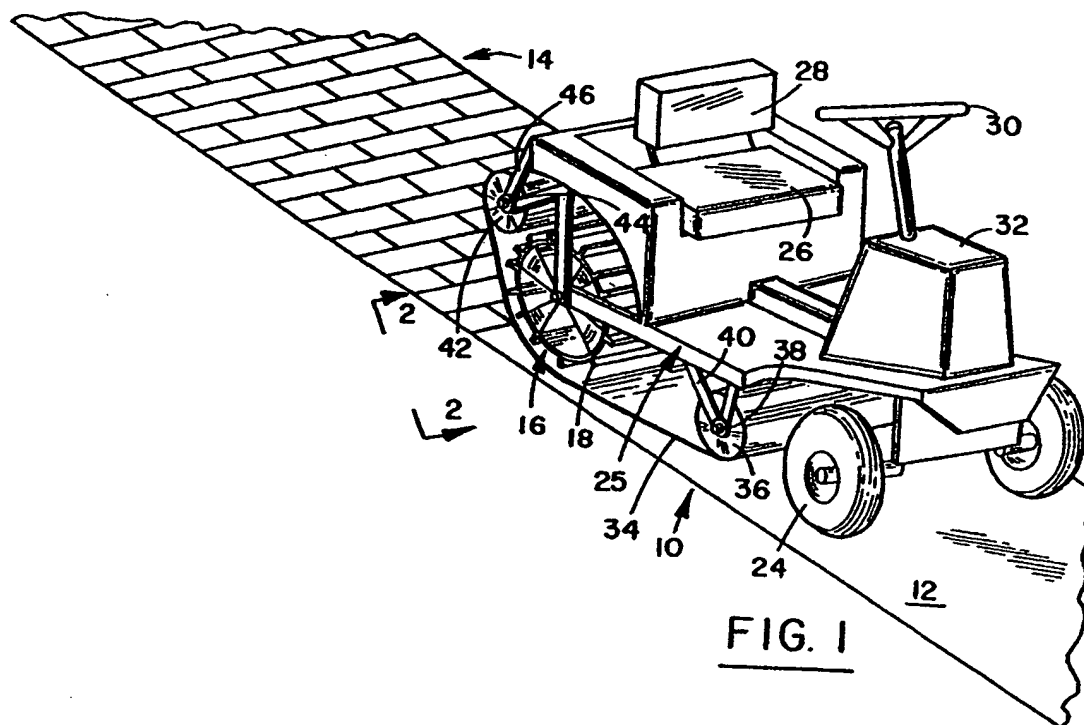
“The low pressure rubber tires 25 are relatively wide and are of a large diameter with respect to wheels 23 and are of the doughnut type of tire known by the trade name of “TERRA TIRE.” (col. 2, ll. 60-64)

“The traction devices of the traction unit 11 comprise endless belts 57 trained about the tires 25 on each set of front and rear wheels. The belts 57 may be fabric and rubber belts or may be made from various other materials that have good tractive effort with the ground and give a long life and lay a track along the ground on which the rubber tires may ride. (col. 3, ll. 58-64) The transverse centers of the tires 25 and belts 57 are designated by centerlines B. Fig. 5 illustrates that the space between the center lines B is greater than the space between the center lines A, resulting in a rectangular arrangement of the wheels 25 and belts 57 with the long side of the rectangle facing in the direction of travel of the vehicle. This results in a stable supporting and drive arrangement for the vehicle and retains the belts 57 to the low-pressure tires 25 by the tension of the belts applied thereto by the tension idlers 59. The traction unit, therefore, can travel over relatively rough terrain and make sharp turns and the belts 57 will be retained in centered relation with respect to the wheels” (col. 4, ll. 18-34)

B. The Moorhead Reference

Moorhead teaches “a continuous concrete impressments process and apparatus to provide concrete with a smooth and undisturbed patterned surface.” (col. 2, ll. 32-35) Referring to Figure 1, “a motorized tractor 10 is seen overlying a concrete surface 12 which has recently been

poured. The concrete surface 12 that has been impressed with a pattern seen generally in the area designated 14. The impressments has been effectuated by a roller 16 having a series of blades 18 that are shown with longitudinal portions 20 and lateral portions 22 thereof. A drum surface 17 is utilized to support the blades 18. The blades 20 and 22 effectuate an impressments of the concrete to provide the pattern generally shown at 14.” (Figure 1, col. 4, ll. 16-27)



“The tractor has been provided with tires 24, a frame 25 for support of the tractor and the rear rollers 16. (Figure 1, col. 3, ll.27-29) “A sheet of plastic 34 is provided to aid as a release agent for the blades 20 and 22. The sheet of plastic 34 is reeled outwardly from the roll of plastic 36 supported on a spindle 38 with frame members 40 holding the spindle 38.” (Figure 1, col. 3, ll. 41-47)

C. The Hamlin Reference

Hamlin teaches an improved method of compacting asphalt pavement recognizing that the ratio between the stiffness of the compactor (E_1) to the stiffness of the asphalt (E_2) should be as low as possible. Further, Hamlin teaches that the radius of the compactor drum (R_1) to the

radius of the curvature of the compacted asphalt (R2) should be as close to 1 as possible. (col. 3, ll. 55-68)

REJECTIONS

VII. ISSUES

The following issues are presented for review:

1. Whether claim 20 should be rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,696,878 to Nelson.
2. Whether claims 23 and 24 should be rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 3,832,079 to Moorhead.
3. Whether claim 33 should be rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 4,737,050 to Halim.

VIII. GROUPING OF CLAIMS

The rejected claims 20, 23-24, and 33 stand or fall together.

IX. ARGUMENTS

Claim 20 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,696,878 issued to Nelson.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.”

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsisimilis verbis* test, *i.e.*, identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

Nelson does not disclose each and every element of the compactor of claim 20, therefore, the Examiner has failed to present a *prima facie* case of anticipation of claim 20. The Examiner erred in asserting that Nelson teaches or enables each of the claimed elements, either expressly or inherently, of the invention as interpreted by one of ordinary skill in the art. In particular, with respect to claim 20, Nelson fails to teach “a support means defining a planar lower run of the belt and forming a compaction surface,” as recited in claim 1.

Independent claim 20 and the dependent claims thereof are directed to a compactor having at least two modular compaction units, a compaction belt and support means for the belt on the compaction units and a power source. The support means defines a planar lower run of the belt and forms a compaction surface. For example, independent claim 20 recites:

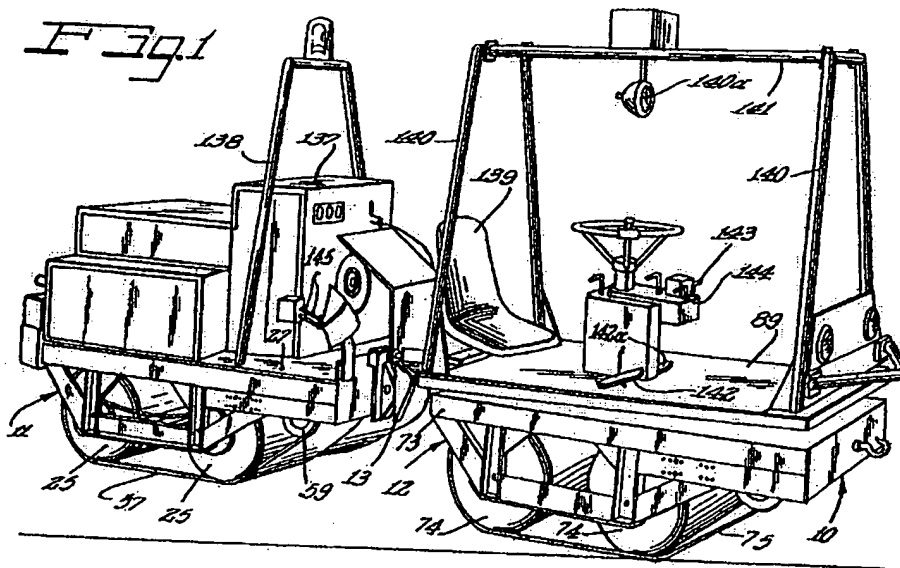
20. A compactor comprising at least two longitudinally spaced modular compaction units connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor, and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface, and wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, supports the upper run of the belt.

Independent claim 20 further claims at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, which supports the upper run of the belt.

As described in the specification, and further in view of Figure 7, “rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62.” (p. 20, ll.12-14) The lower roller assembly shown in Figure 7 supports the lower

planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt, wherein the entire length of the belt, namely the lower planar run, is the compaction surface of the compactor module.

Nelson teaches a traction vehicle 10 with a rear traction unit 11. The traction units comprise endless belts 57 trained about the tires 25 on each set of front and rear wheels. (col. 3, ll. 58-62). The belts may be fabric and rubber belts or may be made from various other materials, which have good tractive effort with the ground and give a long life. (col. 3, ll. 62-64) Further, Nelson discloses wide, low-pressure tires 25 of large diameter for use with the traction vehicle 10. (col. 2, ll. 60-64) Nelson does not disclose a compaction belt or a support means defining a planar lower run of the belt forming a compaction surface. The belt 57 of Nelson does not provide a compaction surface according to principles of the present invention. The belt of Nelson is taught to "lay a track along the ground on which the rubber tires may ride." (col. 3, ll. 62-65, see also Figure 1 below)



Further, Nelson does not disclose at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, which supports the upper run of the belt. Nelson does not disclose two relatively small drums or rollers. Because claim 20 contains at least one element that is not disclosed by Nelson, claim 20 is *prima facie* not anticipated by Nelson. Therefore, claim 20 is patentable over Nelson.

Conclusion of Rejection Under 35 U.S.C. § 102

The Examiner has erred in asserting that Nelson teaches each of the claimed limitations of claim 20 as interpreted by one of ordinary skill in the art. Nelson does not teach a compaction belt or a support means defining a planar lower run of the belt forming a compaction surface; two relatively small drums or rollers, or at least one upper roller positioned vertically above the drums. For at least these reasons, the Examiner has failed to present a *prima facie* case of anticipation of claim 20.

Rejections Under 35 U.S.C. § 103(a)

Claims 23 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of U.S. Patent No. 3,977,074 to Moorhead. Appellants believe the Examiner did not meet his burden to present a *prima facie* case of obviousness. In particular, the Examiner erred in combining Nelson and Moorhead. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of

ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

With respect to the §103 rejections, according to MPEP 2141.01(a), “in order to rely on a reference as a basis for rejection of an applicant’s invention, the reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.” *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Further, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984).

In the present application, the problem with which the inventor is concerned is the compaction of asphalt. Nelson in no way addresses compaction issues, and is not directed for use with asphalt, but rather discloses a simple and improved form of a vehicle, adapted for traveling over rough terrain. (col. 7, ll. 20-23) Nelson teaches that traction is attained by continuous flexible traction devices trained about low-pressure rubber tires. (col. 1, ll. 19-23) The purpose of the belt in Nelson is to provide a riding surface for the rubber tires. (col. 3, ll. 61-64) The rough terrain vehicle of Nelson is non-analogous to the asphalt compaction apparatus of the present invention.

Further, according to MPEP 2143.02, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, or if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or modification to make the proposed modification and the references are not sufficient to render the claims *prima facie* obvious.

With respect to claims 23 and 24, modifying Nelson to create a compaction device changes the principle of operation and renders Nelson unsatisfactory for its intended purpose, namely, improved travel over rough terrain. Moorhead does not correct the deficiency of

Nelson. The drum configuration of Moorhead does not change that Nelson is not a compaction device, but an improved rough terrain vehicle.

As discussed in detail above, Nelson does not teach or disclose a compaction belt having a support means for the belt to define a planar lower run of the belt and form a compaction surface. Moorhead does not correct the deficiency of Nelson. The “belt” of Moorhead is not only unsupported, but is a sheet of plastic for ensuring that the blades and roller can impress the newly formed concrete, but will then not remove material from or gouge the newly laid concrete. (col. 3, ll. 40-63) The sheet of plastic of Moorhead is incapable of providing a constant compaction pressure to the asphalt, and any attempt to modify Nelson in view of Moorhead would render the inventions unsatisfactory for their intended purpose.

Referring to the instant invention, as discussed in the final paragraph of page 4 and through the Specification thereafter, the present invention recognizes that a visco-elastic fluid, such as the binder in hot mix asphalt, has a response to a load that is not only temperature dependent, but also time dependent. The present invention, as claimed, is directed to a compactor having at least two modular compaction units, a compaction belt and support means for the belt on the compaction units and a power source. The support means defines a planar lower run of the belt and forms a compaction surface. As described in the specification, as further in view of Figure 7, “rollers 78, 80 and 82 define a planar lower run of the belt that defines the compaction surface of the compactor module 62.” (p. 20, ll.12-14) The lower roller assembly shown in Figure 7 supports to the lower planar run of the belt and provides a constant compaction pressure to the asphalt. (Figure 7) Accordingly, the apparatus of the present invention provides for a load applied over a longer duration than a roller compactor due to the increased contact length of the belt, wherein the entire length of the belt, namely the lower planar run, is the compaction surface of the compactor module.

An analysis under § 103 requires that the Examiner explain why, after assessing the level of those skilled in the art, the skilled artisan would have found the claimed subject matter, as a whole, to have been obvious. To establish a *prima facie* case of obviousness, there must be some

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references, and there must be a reasonable expectation of success. MPEP § 706.02(j). The suggestion or motivation to make the claimed combination and a reasonable expectation of success must both be found in the prior art. *Id.* The Examiner cannot rely on hindsight as the basis for combining two references. If the references do not expressly or impliedly suggest the combination, “the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Id.* (citing *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985)).

There is no motivation in the references themselves to combine these references. The Examiner has agreed that the intended use of Nelson is not asphalt compaction; however, the Examiner incorrectly concludes that one skilled in the art would have seen similarities of construction and would have considered using the apparatus of Nelson to perform the method of the instant invention. (Office Action dated July 17, 2004, page 4, paragraph 7) The Examiner further notes that “if the apparatus of Nelson was simply driven on a hot asphalt roadway, the apparatus of Nelson would apply a load to the asphalt; thereby compacting it at least slightly.” (Office Action dated July 17, 2004, page 3, paragraph 5) Following this logic, any roller driven unit would suffice for asphalt compaction, including cars, trucks, all-terrain vehicles and the like. This is clearly not logical. Further, Moorhead is directed toward impressing a pattern on a concrete surface; relevant neither to asphalt nor compaction, and thus does not correct the deficiencies of Nelson. The references, consequently, do not suggest the specific compaction apparatus of the instant invention.

There is also no motivation in the knowledge generally available to one of ordinary skill in the art of asphalt compaction to combine these references to result in the instant invention. The Examiner does not state how an individual of ordinary skill in the art would understand that the improved traction vehicle of Nelson would be useful for asphalt compaction. Further, the Examiner does not explain how such a person would recognize that a visco-elastic fluid, such as

the binder in a hot mix asphalt, has a response to a load which is not only temperature dependent, but also time dependent, and more specifically that the present invention teaches that a larger compaction surface provides improved compaction of the asphalt surface. Further, as noted above, Moorhead is directed toward impressing a pattern on a concrete surface and does not correct the deficiencies of Nelson. Anyone skilled in the art of asphalt and concrete paving understands that the equipment and methods for asphalt and concrete paving are clearly differentiated, provide vastly different processes to pave very different materials, and are non-analogous for purposes of prior art references.

The Examiner accordingly has not succeeded in bringing a *prima facie* case of obviousness in this instance. Claims 23 and 24 therefore are patentable under 35 U.S.C. § 103(a) over Nelson in view of Moorhead.

Claim 33 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson as applied above, and further in view of U.S. Patent No. 4,737,050 to Halim. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

As applied to claim 33, Hamlin does not correct the deficiencies of Nelson. The Examiner notes that Nelson does not teach asphalt compaction,” and then uses Halim to teach “using a belt compactor for use with asphalt.” The Examiner further notes that “if the apparatus of Nelson was simply driven on a hot asphalt roadway, the apparatus of Nelson would apply a load to the asphalt; thereby compacting it at least slightly.” (Office Action dated July 17, 2004, page 3, paragraph 5) Additionally, the Examiner states, “Nelson does act as a compactor since compaction is achieved by placing a load on a surface to be compacted, which Nelson inherently does.” (Office Action dated July 17, 2004, page 4, paragraph 7)

Under the principles of inherency, in order for a prior art device to inherently anticipate a claimed process, the device must necessarily perform the method claimed during its normal and usual operation. See MPEP §2112.02. Further, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-1 (Fed. Cir. 1999) (citations omitted). The load pressure and duration of applied load pressure are not necessarily present in the references cited. Further, although the load pressure and duration *may* occur, the Examiner has not established that this occurrence is more than a mere possibility.

There is no motivation in the references themselves to combine these references. The Examiner has indicated that Nelson does not teach compacting asphalt. Halim does not correct the deficiencies of Nelson. As discussed above with respect to independent claim 20 from which dependent claim 33 depends, the apparatus of the present invention provides for a load applied over a longer duration due to the increased compactive surface, namely, the entire length of the belt, referred to herein as the lower planar run, is the compaction surface of the compactor module. Nelson in combination with Halim, does not suggest the specific compaction apparatus as claimed by the instant invention.

There is also no motivation in the knowledge generally available to one of ordinary skill in the art of asphalt compaction to combine these references to result in the instant invention. The form and function of traditional compaction equipment are not consistent with those of the instant invention. There is no basis for assuming that qualities beneficial to traditional asphalt compacting equipment are also likely to be beneficial to the instant invention. The Examiner does not state how an individual of ordinary skill in the art would understand that the improved traction vehicle of Nelson would be useful for asphalt compaction.

The Examiner accordingly has not succeeded in bringing a *prima facie* case of obviousness in this instance. Claim 33 therefore is patentable under 35 U.S.C. § 103(a) over Nelson in view of Halim.

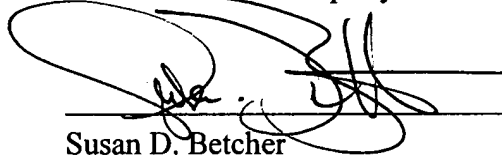
X. CONCLUSION

In summary, applicant believes that the claims of the present invention are patentable, and not obvious in light of the combination of the cited references made by the Examiner. Allowance of the claims is respectfully requested. Accordingly, Appellants respectfully request that the Board reverse the rejection of each of the appealed claims.

Respectfully submitted,

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APPENDIX A

20. (Previously Presented) A compactor comprising at least two longitudinally spaced modular compaction units connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor, and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface, and wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller positioned vertically above the two relatively small drums or rollers, which may optionally be larger than the two relatively small drums or rollers, supports the upper run of the belt.

23. (Previously Presented) A compactor according to claim 20 wherein in each modular compaction unit the belt extends between two large diameter drums or a single larger diameter drum at the leading end of the respective compaction unit, which is optionally driven, and two smaller drums or rollers respectively defining the upper and lower runs of the belt at the trailing end of the respective compaction unit.

24. (Previously Presented) A compactor according to claim 20 wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller, which may optionally be larger than the two relatively small drums or rollers, supports and upper run of the belt.

33. (Previously Presented) A method of compacting a mat of hot mix asphalt comprising compacting the mat using a compactor as claimed in claim 20.